Strategies and tactics for effective prescribing during the foundation year

Introduction

About 5% of all emergency admissions to hospital are the result of prescribed drugs, rising to 10–12% in the elderly (>70 years old) (Pirmohamed et al, 1998; Kohn et al, 2000; Baijer and de Blaey, 2002; Huang et al, 2002). These relate to drugs prescribed in general practice, some on specialist advice. More worrying, from the house officer's point of view, prescription-related illness is also common in hospital (Dean et al, 2002) and 18% of elderly deaths in hospital are the result of hospital medication, half of which are preventable (Ebbeson et al, 2001).

Doctors who do not take at least some of the actions this article recommends are almost certain to contribute to this death toll during their foundation year. Doctors who do take heed might become the safest prescribers in their hospital. In the author's experience, following this advice will also result in more intellectual satisfaction being obtained than if drugs are administered following a 'recipe'. All of the following is evidence based.

Be aware of your lack of knowledge

Most medical schools in the UK do not have adequate teaching in pharmacology and therapeutics (Barber et al, 2003). There will have been no major examination in pharmacology, so doctors will have had no particular reason to master it. This has been the situation for 30 years.

In many medical schools, pharmacology has now been almost eclipsed as a major subject, while the scientific knowledge of drug science has increased tenfold in the same 30-year period. Clinical seniors have been similarly deprived as undergraduates; if they appear expert in pharmacology and therapeutics, it is because they have studied hard to rectify this deficiency, in the course of medical practice. It is impossible to be a safe, effective doctor without a firm grasp of the principles of drug action and use.

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Doctors should make it their business to make good their knowledge deficit. There is no shortage of well-written pharmacology textbooks to help (Rang et al, 2003; McGavock, 2005a). Most doctors probably already carry the British National Formulary (BNF; British Medical Association and Royal Pharmaceutical Society of Great Britain, 2005) (if not, why not?). The BNF is probably the best and most up-to-date prescribing guide worldwide. Never be ashamed to consult it in front of patients or staff.

'Boning up' on pharmacology may begin as a chore, but the deeper it is studied, the more fascinating it becomes. It will illuminate doctors' everyday work when they begin to realize the importance of understanding the problems of drug absorption, distribution, metabolism, renal and hepatic excretion, and the vast subject of drug–drug interaction. Doctors will be aware of what they are targeting when they prescribe a drug: is it a receptor, an enzyme, an ion channel or a carrier molecule?

The permutations of interplay of these factors in a patient receiving several potent drugs require more cognitive effort than any game of chess. Every patient's treatment becomes, for the doctor, an experiment in which the possibility of better health or cure runs parallel to the risk of harm.

The information overload

Although the principles of pharmacology are not hard to master, and the indications, dosage, dosage intervals and major side effects of the commonly used drugs in a particular specialty will soon become very familiar, no human brain can encompass all the relevant information on all the drugs that may have to be prescribed during the foundation year (McGavock, 2004). This includes contraindications and side effects of commonly used drugs and everything about less frequently used drugs.

If computerized drug screening is available, it should be used frequently to review medication of patients who should be improving but are not. Are all the drugs appropriate for the diagnosis? Are any of the drugs mutually incompatible? Could drugs given 'as required' be interfering with treatment (e.g. antacids reducing intestinal absorption)? Over 90% of all avoidable prescription-related illness and death in hospital patients is the result of medication prescription or administration errors on the ward, often at the patient's bedside (Hepler and Segal, 2003).

Role of the clinical pharmacist

Cultivate a good relationship with the hospital's clinical pharmacist. He/she knows much more about drug science than any foundation year doctor does. Doctors should ask for his/her help and guidance whenever they are worried about any treatment regimen which they or a senior clinician has ordered. Clinical pharmacists are usually approachable and helpful, as such an attitude is essential to their liaison work. If a drug-related problem is detected, the pharmacist can diplomatically bring it to the attention of the registrar or consultant, saving any embarrassment that might result from revealing a senior colleague's mistake.

Watch nursing colleagues

Some of the most dangerous errors occur during the administration of medicines. It is no longer possible to be sure that a senior nurse is doing the medicines round (Barber et al, 2003). Reprehensible errors occur daily at this level in hospitals across the country, e.g. administration of methotrexate 10 mg daily, as a disease-modifying antirheumatic drug, instead of 10 mg weekly, or overdosing with warfarin – giving 5 mg daily instead of 0.5 mg daily. Administration of bolus intravenous injections which should have been given in a drip is a common cause of collapse (Ebbeson et al, 2001; Dean et al, 2002).

Request senior scrutiny

Never let a senior registrar or consultant do a ward round without asking him or her to scrutinize every patient's drug chart.

This often results in the discontinuation of unnecessary medicines which have 'crept in'. It has the advantage that blame can no longer be laid at the foundation year doctor's door. Do not assume that all senior doctors have adequate knowledge of prescribing science – they may have, but only anaesthetists have a rigorous, formal training in pharmacology and therapeutics.

Use evidence-based medicine with care

Many specialists appear to consider evidence-based medicine (EBM) as a holy grail. It is not. It is only a useful extra aid to treatment decision-making (Miles et al, 2003; Petros, 2003; McGavock, 2005b). The elderly patient on two drugs has an 11% risk of a serious adverse drug reaction, while such a patient on six drugs has a 33% risk (Huang et al, 2002). Become accustomed to balancing EBM against clinical sense – choosing which of the desirable treatments a patient must have and which should be withheld, EBM notwithstanding. This is best done in discussion with the clinical pharmacist and senior clinician.

Accident and emergency and prescription-related illness

Accident and emergency (A&E) is one of the most fascinating and challenging clinical environments. Doctors in A&E work at maximum capacity, coping with the huge amount of trivia which may be hiding a substantial amount of serious illness, including life-threatening adverse drug events (5% of all admissions, but 10–12% of elderly admissions (Pirmohamed et al, 1998; Kohn et al, 2000; Baijer and de Blaey, 2002; Huang et al, 2002)).

Get a copy of Howard et al's (2003) study of the reasons for preventable drug-related admissions, keep it on hand and read it once weekly while working in A&E. This showed that the drugs which most frequently cause hospital admissions are some of the most commonly-used drugs – non-steroidal anti-inflammatory drugs, antiplatelet drugs, warfarin, beta-blockers, anti-epileptics, loop diuretics, potassium-sparing diuretics, sulphonylureas, digoxin, thiazides and related diuretics, insulins and inhaled steroids (the latter usually because of non-compliance) (Hepler and Segal, 2003). These studies showed that 33% of emergency admissions are caused by non-compliance or erratic compliance, and a further 30% are caused by inadequate clinical monitoring in primary care.

Conclusions

Hepler and Segal (2003) state:

> **'Today we have numerous effective and relatively safe drugs released into an unsafe and complex environment of prescribing, dispensing, administration and consumption.'**

Health management organizations in the USA have attempted to address this problem, with limited success. In hospital, preventable drug-related illness is usually caused by 'systems failure' rather than individual error, i.e. there are inadequate mechanisms for assessing, directing and controlling medication and there is little feedback of the performance of everyone involved – doctors, nurses, pharmacists and patients (Hepler and Segal, 2003).

Hepler and Segal (2003) provide the necessary philosophical attitude:

> **'Preventable drug-related morbidity is largely due to systems failures, defined as those occasions when a planned sequence of discreet but interdependent decisions and actions, carried out by several individuals and directed at a common objective, fails to achieve the intended outcome when that outcome was achievable.'**

It will probably be years before a reliable system is instituted across the NHS. In the meantime, house officers, being most intimately acquainted with the patients, can improve outcomes and minimize risk far in advance of their junior status. **BJHM**

KEY POINTS

- Be aware of your lack of knowledge of basic pharmacology relevant to prescribing, and rectify this knowledge deficit.
- Cultivate good relationships with the clinical pharmacists in the hospital and ask for their guidance whenever there are concerns about any patient's drug treatment.
- Realize that registrars and consultants can also make serious prescribing mistakes and be prepared to ask the clinical pharmacist's advice if in doubt.
- Screen patients' regimens for interactions and side effects using ward software, if available.
- Realize that over 90% of avoidable prescription-related illnesses and deaths in hospital result from errors at the ward or bedside.
- Never allow a senior clinician to do a ward round without scrutinizing each patient's drug chart.
- When on accident and emergency duty, remember that 5% of all the life-threatening emergency admissions are caused by prescribed drugs (10–12% in the elderly).

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